

10/045 866

CotC

PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

26

Application Number

**PATENT**

6,970,736

Filing Date

**Issue**

November 29, 2005

First Named Inventor

Komachi et al.

Art Unit

Examiner Name

Attorney Docket Number

RYOU-OP275US

**ENCLOSURES (Check all that apply)**

<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	Request for Certificate of correction
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	Copy of previously filed office action reply
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> Landscape Table on CD	Post Card
<input type="checkbox"/> Reply to Missing Parts/Incomplete Application	<input type="checkbox"/> Remarks	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53		

**Certificate****FEB 08 2006****of Correction****SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm Name	BROWN & MICHAELS, PC		
Signature			
Printed name	Meghan A. Van Leeuwen		
Date	11/30/06	Reg. No.	45,612

**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Justin Wood	Date	11/30/06

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**FEB 8 2006**



Patent No. 6,970,736

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent Number: 6,970,736  
Issued: November 29, 2005  
Name of Patentee: Komachi et al.  
Title of Invention: ANALYSIS SYSTEM OF MATTER ADHERED TO INSIDE WALL  
OF VESSEL

**Commissioner of Patents and Trademarks  
Washington, DC 20231  
Attn: Certificate of Correction Branch**

**REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT  
FOR PTO MISTAKE (37 CFR 1.322)**

1. Attached in duplicate is Form PTO/SB/44 with at least one copy being suitable for printing.
2. Attached are copies of the following:
  - Office action response dated November 2, 2004
  - Copy of the abstract and relevant claims for issued patent 6,970,736 (Cover page and columns 7 through 8).
3. The exact page and line numbers where errors occur in the application file are:

Abstract, line 6: "receivingoptical" should read "receiving optical"

Abstract, line 9: "reciving" should read "receiving"

Claim 1 (Column 7, line 17): "inset" should read "insert"

Claim 1 (Column 7, line 18): "inserted said vessel" should read "inserted into said vessel"

Claim 1 (Column 7, line 20): "menu" should read "main"
4. Regarding the errors introduced by the patent office, the correct wording for the Abstract errors is found on page 2 of the office action response dated November 2, 2004. The correct wording for the claim errors is found on page 3 (claim 9) of the office action response dated November 2, 2004.
5. Please send the Certificate to:

Meghan Van Leeuwen  
Brown & Michaels, P.C.  
400 M&T Bank Building  
118 North Tioga Street

FEB 8 2006

Ithaca, New York 14850-4343

By: 

Meghan Van Leeuwen, Reg. No. 45,612

Agent of Record

Date: 1/30/04

FEB 8 2004

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

**PATENT NO. : 6,970,736**

**DATED: November 29, 2005**

**INVENTOR: Komachi et al.**

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Section (57), Abstract, line 6: replace "receivingoptical" with "receiving optical"

Section (57), Abstract, line 9: replace "reciving" with "receiving"

Column 7, line 17: replace "inset" with "insert"

Column 7, line 18: replace "inserted said vessel" with "inserted into said vessel"

Column 7, line 20: replace "menu" with "main"

**MAILING ADDRESS OF SENDER:**

**PATENT NO. 6,970,736**

Brown & Michaels  
400 M&T Bank Building  
118 North Tioga Street  
Ithaca, New York 14850-4343

(PTO FORM PTO/SB/44)

**FEB 8 2006**

**UNITED STATES PATENT AND TRADEMARK OFFICE**

**CERTIFICATE OF CORRECTION**

**PATENT NO. : 6,970,736**

**DATED: November 29, 2005**

**INVENTOR: Komachi et al.**

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Section (57), Abstract, line 6: replace "receivingoptical" with "receiving optical"

Section (57), Abstract, line 9: replace "reciving" with "receiving"

Column 7, line 17: replace "inset" with "insert"

Column 7, line 18: replace "inserted said vessel" with "inserted into said vessel"

Column 7, line 20: replace "menu" with "main"

**MAILING ADDRESS OF SENDER:**

**PATENT NO. 6,970,736**

Brown & Michaels  
400 M&T Bank Building  
118 North Tioga Street  
Ithaca, New York 14850-4343

(PTO FORM PTO/SB/44)

FEB 8 2006



US006970736B2

(12) **United States Patent**  
**Komachi et al.**

(10) **Patent No.:** **US 6,970,736 B2**  
(45) **Date of Patent:** **Nov. 29, 2005**

(54) **ANALYSIS SYSTEM OF MATTER ADHERED TO INSIDE WALL OF VESSEL**

(75) Inventors: **Yuichi Komachi, Akishima (JP); Katsuo Aizawa, Yokohama (JP); Atsushi Utsumi, Kawanishi (JP)**

(73) Assignee: **Machida Endoscope Co., Ltd., Tokyo (JP)**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 515 days.

(21) Appl. No.: **10/045,866**

(22) Filed: **Oct. 29, 2001**

(65) **Prior Publication Data**

US 2002/0072678 A1 Jun. 13, 2002

(30) **Foreign Application Priority Data**

Oct. 31, 2000 (JP) ..... 2000-331737

(51) Int. Cl.<sup>7</sup> ..... **A61B 5/02; A61B 6/00; G02B 6/04**

(52) U.S. Cl. .... **600/479; 600/407; 600/476; 385/115; 385/116; 385/120; 385/123**

(58) Field of Search ..... **600/475, 477, 600/478, 377, 342, 182; 606/13-17, 7; 385/12, 385/28, 58, 49, 70, 116, 117, 118, 120; 356/301**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,867,529 A 9/1989 Utsumi et al. .... 350/96.25  
5,104,392 A \* 4/1992 Kittrell et al. .... 606/15  
5,280,788 A 1/1994 Janes et al. .... 128/665  
5,293,872 A \* 3/1994 Alfano et al. .... 600/475  
5,402,508 A \* 3/1995 O'Rourke et al. .... 385/31

5,496,305 A \* 3/1996 Kittrell et al. .... 606/15  
5,710,626 A \* 1/1998 O'Rourke et al. .... 356/301  
5,842,995 A 12/1998 Mahadecan-Jensen et al. .... 600/473  
5,953,477 A 9/1999 Wach et al. .... 385/115  
6,222,970 B1 \* 4/2001 Wach et al. .... 385/115  
6,487,349 B2 \* 11/2002 Wach et al. .... 385/115  
2002/0168317 A1 \* 11/2002 Daighighian et al. .... 424/1.11

**FOREIGN PATENT DOCUMENTS**

WO WO 95/11624 A 5/1995  
WO WO 99/65382 A 12/1999

**OTHER PUBLICATIONS**

"Study of Fiber-optic Probes for *in Vivo* Medical Raman Spectroscopy", M.G. Shim, B.C. Wilson, E. Marple, and M. Wach, *Applied Spectroscopy*, vol. 53, No. 6, 1999, pp 619-627.

\* cited by examiner

*Primary Examiner*—Ali Imam

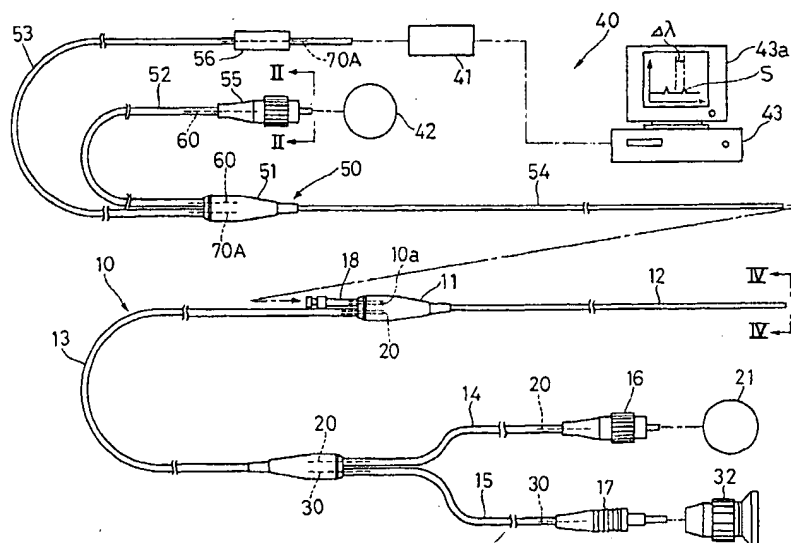
*Assistant Examiner*—Baisakhi Roy

(74) *Attorney, Agent, or Firm*—Brown & Michaels, PC; Eugene Stephens & Associates

(57) **ABSTRACT**

An analysis system comprises an endoscope 10 insertable into the vessel and a Raman analysis apparatus 40. An insert cable 54 of the Raman analysis apparatus 40 is inserted into a channel 10a of the endoscope 10. An excitation optical fiber 60 and a bundle 70A of a plural number of light receiving optical fibers 70 are received in the insert cable 54. A transparent small piece 63 having a film-like excitation optical filter 64 is abutted against the distal end of the fiber 60. A transparent plate 71 having a film-like light receiving optical filter 72 is abutted against the distal end of fibers bundle 70A. The plate 71 has a center hole 71a and the piece 63 is fitted into the hole 71a.

**3 Claims, 5 Drawing Sheets**



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light receiving optical fibers bundle 70A. The band pass filter 64 is vapor deposited on the distal end face of the excitation optical fiber 60 and a notch filter 72 is vapor deposited on the distal end face of the light receiving optical fiber bundle 70A.

The present invention should not be limited to the above embodiments. Instead, many changes and modifications can be made in accordance with necessity.

For example, a catheter can be used as the guiding apparatus. The window formed in the distal end of the insert portion of the guiding apparatus may be open.

What is claimed is:

1. An analysis system of matter adhered to an inside wall of a vessel comprising:

- a guiding apparatus including
  - a main body portion,
  - a flexible inset portion extending from said main body portion and being able to be inserted said vessel and having a window formed in a distal end thereof, and
  - a channel extending through said main body portion and insert portion and reaching said window, and
- a Raman analysis apparatus including
  - a light source emitting an excitation light,
  - a spectroscope spectrally analyzing said matter adhered to the inside wall of said vessel,
  - a flexible insert cable to be inserted into said channel and whose distal end is faced with said window,
  - an excitation optical fiber being received in said insert cable and whose basal end is connected to said light source for transmitting said excitation light and whose distal end is arranged at a central area of the distal end portion of said insert cable,
  - a plural number of light receiving optical fibers being received in said insert cable and whose basal end are connected to said spectroscope and whose distal end are arranged in such a manner as to surround said excitation optical fiber at the distal end portion of said insert cable,

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a transparent excitation small piece having a film-like excitation optical filter adhered to a surface thereof and the surface being abutted against a distal end of said excitation optical fiber, said film-like excitation optical filter cutting all light only excepting a light having a predetermined wavelength, and

a transparent light receiving plate having a film-like light receiving optical filter adhered to a surface thereof and the surface being abutted against distal ends of said plural number of light receiving optical fibers, said film-like light receiving optical filter cutting only a light having said predetermined wavelength,

wherein said excitation light along said excitation optical fiber is projected through said window and Raman scattered by impinging on said matter adhered to the inside wall of said vessel, said scattered light is made incident to said window, and said incident light is transmitted along said light receiving optical fibers to said spectroscope for analyzing, and

wherein said transparent light receiving plate has a center hole and said transparent excitation small piece is fitted into said center hole.

2. An analysis system of matter adhered to an inside wall of a vessel according to claim 1, wherein another excitation optical filter for cutting all light only excepting a light having said predetermined wavelength is disposed between said light source and said excitation optical fiber.

3. An analysis system of matter adhered to an inside wall of a vessel according to claim 1, wherein said guiding apparatus is an endoscope through which an interior of said vessel can be observed.

\* \* \* \* \*



PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

19

Application Number

10/045,866

Filing Date

October 29, 2001

First Named Inventor

Komachi

Art Unit

3737

Examiner Name

Qaderi, Runa S.

Attorney Docket Number

RYOU-OP275US

**ENCLOSURES (Check all that apply)**

Fee Transmittal Form



Fee Attached



Amendment/Reply



After Final



Affidavits/declaration(s)



Extension of Time Request



Express Abandonment Request



Information Disclosure Statement



Certified Copy of Priority Document(s)

Reply to Missing Parts/  
Incomplete ApplicationReply to Missing Parts  
under 37 CFR 1.52 or 1.53

Drawing(s)



Licensing-related Papers



Petition

Petition to Convert to a  
Provisional Application

Power of Attorney, Revocation



Change of Correspondence Address



Terminal Disclaimer



Request for Refund



CD, Number of CD(s) \_\_\_\_\_



Landscape Table on CD



After Allowance Communication to TC

Appeal Communication to Board  
of Appeals and InterferencesAppeal Communication to TC  
(Appeal Notice, Brief, Reply Brief)

Proprietary Information



Status Letter

Other Enclosure(s) (please identify  
below):

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Remarks

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm Name

BROWN &amp; MICHAELS, PC

Signature

Reg. No. 45,612

Printed name

Meghan A. Van Leeuwen

Date

11/2/04

Reg. No.

45,612

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Justin Wood

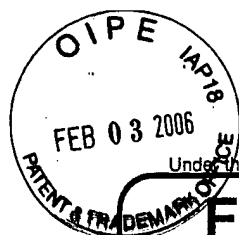
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PTO/SB/17 (10-04)

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# FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ ) 110.00

**Complete if Known**

Application Number	10/045,866
Filing Date	October 29, 2001
First Named Inventor	Komachi
Examiner Name	Qaderi, Runa S.
Art Unit	3737
Attorney Docket No.	RYOU-OP275US

**METHOD OF PAYMENT** (check all that apply)☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit  
Account  
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Deposit  
Account  
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Brown &amp; Michaels, PC

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ ) 0.00

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	-20** =	18.00	0.00
Multiple Dependent	-3** =	88.00	0.00

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2) (\$ ) 0.00				

\*\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION** (continued)**3. ADDITIONAL FEES**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	110.00
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ ) 110.00

**SUBMITTED BY**

(Complete if applicable)

Name (Print/Type)	Meghan Van Leeuwen	Registration No. (Attorney/Agent)	45,612	Telephone	607-256-2000
Signature		Date	11/2/04		

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FEB 8 2005

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Serial No. 10/045,866  
Applicant: Komachi  
Filed: October 29, 2001  
Title: ANALYSIS SYSTEM OF MATTER ADHERED TO INSIDE  
WALL OF VESSEL  
Art Unit: 3737  
Examiner: Qaderi, Runa S.  
Confirmation Number: 1103  
Attorney Docket No.: RYOU-OP275Us

Commissioner of Patents and Trademarks  
Alexandria, VA 22313-1450

**PETITION FOR EXTENSION OF TIME TO FILE RESPONSE  
ACCOMPANIED BY FEE**

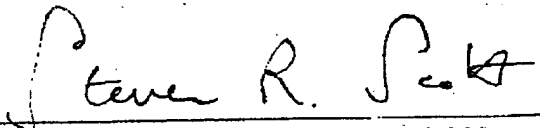
The applicant herewith petitions the Commissioner of Patents and Trademarks to extend the time to respond to the Office Action dated July 2, 2004, for one month, from October 2, 2004 to November 2, 2004.

A check in the amount of \$ 110.00 is attached for payment of extension fee.

The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to Deposit Account No. 02-0910. **A duplicate of this transmittal is attached.**

Respectfully submitted:

Date: 11/2/04

  
Steven R. Scott, Registration No.: 32,000  
BROWN & MICHAELS, PC  
400 M&T Bank Building, 118 N. Tioga Street  
Ithaca, New York 14850-4343  
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FEB 8 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

THE COMMISSIONER OF PATENTS AND TRADEMARKS  
Alexandria VA 22313-140

Serial No. 10/045,866  
Applicant: Komachi  
Filed: October 29, 2001  
Title: ANALYSIS SYSTEM OF MATTER ADHERED TO INSIDE WALL OF VESSEL  
Art Unit: 3737  
Attorney Docket No.: RYOU-OP275US

INFORMATION DISCLOSURE STATEMENT

List of Sections Forming Part of This Information Disclosure Statement

The following sections are being submitted for this information Disclosure Statement

1. ☒ Preliminary Statements
2. ☒ FORM PTO - 1449 (Modified)
3. ☐ Statement As To Information Material To Examination Not Found in Patents or Publications
4. ☐ Identification of Prior Application In Which Listed Information Was Already Cited and For Which No Copies Are Submitted Or Need Be Submitted.
5. ☐ Cumulative patents or Publications
6. ☐ Copies of Listed Information Items Accompanying This Statement
7. ☐ Concise Explanation of Non-English Language Listed Information Items.
8. ☐ Translation(s) of Non-English Language Documents
9. ☐ Certification under MPEP 609(e)
10. ☒ Identification of Person(s) Making This Information Disclosure Statement

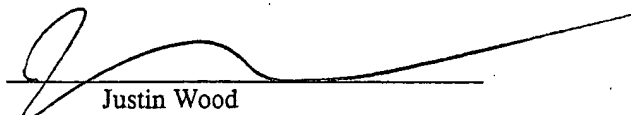
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CERTIFICATE OF MAILING

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Date: November 2, 2004

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Justin Wood

FEB 8 2005

## **Section 1. Preliminary statements**

Applicant submits herewith patents, publications or other information of which he is aware, which he believes may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 CFR 1.56(g)), an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13-25, at 25.

## **Section 2. Form PTO - 1449 (Modified) (SEE ATTACHMENT)**

\*EXAMINER: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw a line through citation if not in conformance or not considered. Include a copy of this form with the next communication to applicant.

## **Section 3. Statement As To Information Material For Examination Not Found in Patents or Publications (Information not listed in PTO 1449)**

## **Section 4. Identification of Prior Application in Which Listed Information Was Already Cited and For Which No Copies Are Submitted Or Need Be Submitted**

## **Section 5. Cumulative Patents or Publications**

☐ Item(s)

are cumulative of the following patents or publication listed on Form PTO 1449 (modified):

In accordance with 37 CFR 1.98(c) a copy of \_\_\_\_\_ is being submitted with this information disclosure statement.

## **Section 6. Copies of Listed Information Items Accompanying This Statement**

Legible copies of all items listed accompany this information statement.

☐ Exception(s) to above:

☐ Items in prior application from which an earlier filing date is claimed for this application as identified in Section 4.

☐ Cumulative patents or publications identified in Section 5.

## **Section 7. Concise Explanation of Non-English Language Listed Information Items**

## **Section 8. Translation(s) of Non-English Language Documents**

☐ Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

☐ No English language translations of the foreign language patents, publications or information or parts thereof are readily available, except for those listed above.

☐ The following foreign language documents submitted are believed to be the equivalent or

FEB 8 2000

substantial equivalent of the English language documents identified below, which are also submitted herewith.

**Section 9. Certification under Rule 1.97**

☐ The undersigned hereby certifies that:

a. This Statement is being filed after the latest of (1) three months after the filing date of a national application; (2) three months after the date of entry of the national stage as set forth in w 1.491 in an international application; (3) the mailing date of a first Office action on the merits.

b. The fee set forth in §1.17(p)

☐ Is being paid with this Information Disclosure Statement

☐ Is not due because:

☐ (1) Each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or

☐ (2) No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the statement.

**Section 10. IDENTIFICATION OF PERSON(S) MAKING THIS INFORMATION DISCLOSURE STATEMENT**

The person making this statement is

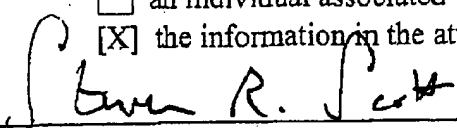
(a) ☐ the inventor(s) who signs below

(b) ☒ the attorney who signs below on the basis of:

☐ the information supplied by the inventor(s)

☐ an individual associated with the filing and prosecution of this application (37 CFR 1.56(c)).

☒ the information in the attorney's file

  
Steven R. Scott, Registration No. 32,000

Date: 11/2/04

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FEB 8 2005

Section 2. Form PTO - 1449 (Modified) (ATTACHMENT)

FORM PTO-1449 U.S. DEPT. OF COMMERCE (Modified) PATENT AND TRADEMARK OFFICE	ATTY DOCKET NO. RYOU-OP275US	SERIAL NO. 10/045,866
	APPLICANT Komachi	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	FILING DATE October 29, 2001	GROUP 3737

U.S. PATENT DOCUMENTS

Exam Initial	DOCUMENT NUMBER	DATE	PATENTEE	CLASS	SUB	FILING DATE IF APPROPR
	5,953,477	09/14/1999	Wach et al.	385	115	

FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

Exam Initial	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB	TRANSLATION YES   NO

OTHER PRIOR ART

Exam Initial	Author, Title, Date, Pertinent Pages, Etc

EXAMINER	DATE CONSIDERED

FEB 8 2006



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

November 2, 2004

Serial No. 10/045,866  
Applicant: Komachi  
Filed: October 29, 2001  
Title: ANALYSIS SYSTEM OF MATTER ADHERED TO INSIDE  
WALL OF VESSEL  
Art Unit: 3737  
Examiner: Qaderi, Runa S.  
Confirmation Number: 1103  
Attorney Docket No.: RYOU-OP275Us

HONORABLE COMMISSIONER OF PATENTS  
Alexandria, VA 22313-1450

**AMENDMENT  
AND RESPONSE TO OFFICE ACTION**

In response to the Office Action dated July 2, 2004, please amend the above-identified application as follows:

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

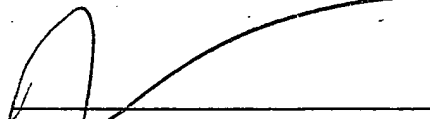
**Remarks/Arguments** begin on page 8 of this paper.

**CERTIFICATE OF MAILING**

**Certified Mail No.:** 7002 0860 0005 0313 7600

**Date:** November 2, 2004

I hereby certify that this correspondence is being deposited in the U.S. Postal Service as Certified Mail with a return receipt requested, in an envelope addressed to the Commissioner of Patents Alexandria VA 22313-1450.

  
Justin Wood

FEB 8 2006

### **Amendments to the Specification:**

Pursuant to 37 C.F.R. § 1.121(b) kindly amend the specification by deleting the current Abstract and inserting the following:

An analysis system comprises an endoscope 10 insertable into the vessel and a Raman analysis apparatus 40. An insert cable 54 of the Raman analysis apparatus 40 is inserted into a channel 10a of the endoscope 10. An excitation optical fiber 60 and a bundle 70A of a plural number of light receiving optical fibers 70 are received in the insert cable 54. A transparent small piece 63 having a film-like excitation optical filter 64 is abutted against the distal end of the fiber 60. A transparent plate 71 having a film-like light receiving optical filter 72 is abutted against the distal end of fibers bundle 70A. The plate 71 has a center hole 71a and the piece 63 is fitted into the hole 71a.

### Amendments of the Claims:

A detailed listing of all claims in the application is presented below. This listing of claims will replace all prior versions, and listings, of claims in the application. All claims being currently amended are submitted with markings to indicate the changes that have been made relative to immediate prior version of the claims. The changes in any amended claim are being shown by strikethrough (for deleted matter) or underlined (for added matter).

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (New): An analysis system of matter adhered to an inside wall of a vessel comprising:
  - a guiding apparatus including
    - a main body portion,
    - a flexible insert portion extending from said main body portion and being able to be inserted into said vessel and having a window formed in a distal end thereof, and
    - a channel extending through said main body portion and insert portion and reaching said window; and

a Raman analysis apparatus including

- a light source emitting an excitation light,
- a spectroscope spectrally analyzing said matter adhered to the inside wall of said vessel,
- a flexible insert cable to be inserted into said channel and whose distal end is faced with said window,
- an excitation optical fiber being received in said insert cable and whose basal end is connected to said light source for transmitting said excitation light and whose distal end is arranged at a central area of the distal end portion of said insert cable,
- a plural number of light receiving optical fibers being received in said insert cable and whose basal end are connected to said spectroscope and whose distal end are arranged in such a manner as to surround said excitation optical fiber at the distal end portion of said insert cable,
- a transparent excitation small piece having a film-like excitation optical filter adhered to a surface thereof and the surface being abutted against a distal end of said excitation optical fiber, said film-like excitation optical filter cutting all light only excepting a light having a predetermined wavelength, and
- a transparent light receiving plate having a film-like light receiving optical filter adhered to a surface thereof and the surface being abutted against distal ends of said plural number of light receiving optical fibers, said film-like light receiving optical filter cutting only a light having said predetermined wavelength,

wherein said excitation light along said excitation optical fiber is projected through said window and Raman scattered by impinging on said matter adhered to the inside wall of said vessel, said scattered light is made incident to said window, and said incident light is transmitted along said light receiving optical fibers to said spectroscope for analyzing, and

wherein said transparent light receiving plate has a center hole and said transparent excitation small piece is fitted into said center hole.

10. (New): An analysis system of matter adhered to an inside wall of a vessel according to claim 9, wherein another excitation optical filter for cutting all light only excepting a light having said predetermined wavelength is disposed between said light source and said excitation optical fiber.
11. (New): An analysis system of matter adhered to an inside wall of a vessel according to claim 9, wherein said guiding apparatus is an endoscope through which an interior of said vessel can be observed.
12. (New): An analysis system of matter adhered to an inside wall of a vessel comprising:
  - a guiding apparatus including
    - a main body portion,
    - a flexible insert portion extending from said main body portion and being able to be inserted into said vessel and having a window formed in a distal end thereof, and
    - a channel extending through said main body portion and insert portion and reaching said window; and
  - a Raman analysis apparatus including
    - a light source emitting an excitation light,

a spectroscope spectrally analyzing said matter adhered to the inside wall of said vessel,

a flexible insert cable to be inserted into said channel and whose distal end is faced with said window,

an excitation optical fiber being received in said insert cable and whose basal end is connected to said light source for transmitting said excitation light, and

a plural number of light receiving optical fibers being received in said insert cable and whose basal end are connected to said spectroscope and whose distal end are bundled at the distal end of said insert cable,

wherein a distal end of said excitation optical fiber is arranged at an outer side in a radial direction of said bundle of light receiving optical fibers at the distal end portion of said insert cable, and

wherein a distal end face of said excitation optical fiber is slanted with respect to an axis of said excitation optical fiber so that an optical axis of said excitation light along said excitation optical fiber is deflected in a direction intersecting a center axis of said bundle of light receiving optical fibers which is orthogonal to a distal end face of said bundle of light receiving optical fibers, said deflected excitation light is projected through said window and Raman scattered by impinging on said matter adhered to the inside wall of said vessel, said scattered light is made incident to said window, and said incident light is transmitted along said bundle of light receiving optical fibers to said spectroscope for analyzing.

13. (New): An analysis system of matter adhered to an inside wall of a vessel according to claim 12, wherein a film-like excitation optical filter for cutting all light only excepting a light having a predetermined wavelength is adhered to said slant distal end face of said

excitation optical fiber, and a film-like light receiving optical filter for cutting only a light having said predetermined wavelength is adhered to said distal end face of said bundle of light receiving optical fibers.

14. (New): An analysis system of matter adhered to an inside wall of a vessel according to claim 13, wherein another excitation optical filter for cutting all light only excepting a light having said predetermined wavelength is disposed between said light source and said excitation optical fiber.
15. (New): An analysis system of matter adhered to an inside wall of a vessel according to claim 12, wherein said guiding apparatus is an endoscope through which an interior of said vessel can be observed.

## REMARKS

The office action of July 2, 2004 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1 through 8 have been cancelled and claims 9 through 15 are being added by this response.

### Objections to the Abstract

The Examiner has rejected the Abstract, stating:

The abstract of the disclosure is objected to because it exceeds the 150 words limit. Correction is required. See MPEP § 608.01(b).

The original Abstract has, accordingly, been deleted and a new replacement Abstract added. Reconsideration and withdrawal of the objection is, therefore, respectfully requested.

### Rejection(s) under 35 U.S.C. §102

Claims 1, 2 and 8 were rejected under 35 U.S.C. 102(b) as being anticipated by *Alfano et al.* (5,293,872). The Examiner states that:

Alfano et al. teaches method and corresponding apparatus for distinguishing of matter adhered to an inside of a vessel using Raman spectroscopy. With reference to applicant's claim 1, figures 6 and 9 of Alfano et al. below clearly teach a guiding apparatus 109 including a main body, a flexible insert portion extending from said main body portion and having a window formed in a distal end thereof, and a channel extending through said main body portion and insert portion and reaching said window, said insert portion being able to be inserted into said vessel; said Raman analysis system including a flexible channel 125/80 to be inserted into said channel and whose distal end is faced with said window, an excitation optical fiber 81 and a light receiving fiber 83 which are both received in said insert cable, a light source 121/135 connected to basal end of said excitation optical fiber, and a spectroscope 127 connected to a basal end of said light receiving optical fiber; and an excitation light emitted from said light source 121/135 projected through said window via said excitation optical fiber 81 and Raman scattered by impinging on said matter adhered to the inside wall of said vessel, spectrometer 127 via said light receiving optical fiber 83, and thus said matter adhered to the inside wall of said vessel being analyzed, column 7 through 9, more specifically column 7 lines 20-33 and column 8. With respect to claim 2 figures 6 (above) and 7 and column 7 lines 20-33 clearly diagram and discuss, respectively, a single number of said excitation optical fiber 81 and plural number of said light receiving optical fibers 83; and at a distal end portion

of said insert cable, said single number of excitation optical fiber 81 is arranged at a central area thereof and said plural number of light receiving optical fibers 83 are arranged in such a manner as to surround said excitation optical fiber 81. Finally with respect to claim 8 Alfano et al. column 9 lines 9-28 recites that the endoscope 141 (interpreted as the guiding apparatus of the applicant) is sized and shaped to fit within an artery or other blood vessel.

Applicant respectfully disagrees with this rejection, but has (nonetheless) replaced these claims with new claims superseding the grounds for rejection stated.

New claim 9 basically combines the limitations of original claims 1, 2 and 3, overcoming the rejection under 102. It is, therefore, respectfully suggested that the rejection of independent claim 1 and dependent claim 2 as being anticipated by *Alfano et al.* is overcome in new claim 9. Dependent claims 10 and 11, being dependent upon and further limiting independent claim 9, should also be allowable over 102 for that reason, as well as for the additional recitations they contain.

Reconsideration and withdrawal of the 102 rejection are, for aforesaid reasons, respectfully requested.

#### **Rejection(s) under 35 U.S.C. §103**

Claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Alfano et al.* in view of *Janes et al.* Claims 3, 6 and 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Alfano et al.* in view of *Wach et al.* With regard to claims 4 and 5, the Examiner states that:

Alfano et al. teaches an apparatus for distinguishing matter adhered to the inside wall of a vessel using Raman spectroscopy. With respect to claims 4 and 5 Alfano et al. does not explicitly recite said optical means for deflecting an optical axis of said excitation light in a direction intersecting a center axis of said bundle of light receiving optical fibers is disposed at a distal end of said excitation optical fiber, wherein a distal end face of excitation optical fiber is slanted with respect to an axis of said excitation optical fiber and said distal end face is provided as said optical means. The Janes et al. reference teaches a device for optical diagnosis of tissue using a probe with a bundle of optical fibers having a beveled surface, column 6 lines 52-62. Figure 6A of Janes et al. below diagram the bundle of optical fibers having a beveled surface.

The beveled or tapered structure of the distal ends of the optical fibers shown above satisfies the applicant's limitation to said optical means for deflecting an optical axis of

said excitation light in a direction intersecting a center axis of said bundle of light receiving optical fibers is disposed at a distal end of said excitation optical fiber, wherein a distal end face of excitation optical fiber is slanted with respect to an axis of said excitation optical fiber and said distal end face is provided as said optical means. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the beveled or slanted optical fiber surface of Janes et al. into the probe of Alfano et al. because such a structure provides for controlled light transmission and detection as taught by Janes et al., column 1 lines 45-47 and column lines 61-64. Therefore providing a more efficient analysis of the tissue.

Finally the combination of Alfano et al. in view of Janes et al. does not explicitly teach said excitation optical fiber arranged at an outer side in a radial direction of said bundle of light receiving optical fibers. It would have been obvious to a person of ordinary skill in the art to provide for such an arrangement because applicant's function of maximizing emission and detection of light by the slanted or beveled optical fiber surface is satisfied by the structure of Alfano et al. in view of Janes et al.

And, with regard to claims 3, 6, and 7, the Examiner states that:

Alfano et al. teaches an apparatus for distinguishing matter adhered to the inside wall of a vessel using Raman spectroscopy. Alfano et al., figure 1, diagrams a filter 17 disposed between excitation optical fiber and light source.

Alfano et al. does not teach a film-like excitation filter adhered to the distal end of excitation optical fiber and a film-like filter adhered to the distal end of the receiving optical fiber as claimed in 6 and 7. In reference to claim 3 Alfano et al. does not teach the light receiving plate with corresponding film-like filter adhered to it for excitation and receiving optical fibers.

Wach et al. teaches filtering optical fibers by depositing thin films directly onto the ends of the optical fiber (or adhered to distal ends as claimed by applicant) to be used to produce high-quality, high performance filters, see Abstract. It would have been obvious to a person of ordinary skill in the art to have deposited/adhered the film-like filters onto the ends of optical fibers as taught by Wach et al. into the probe system of Alfano et al. because it allows effective and efficient manipulation of the light delivery and reception region especially during Raman analysis as taught by Wach et al. Furthermore it would have been obvious to have alternatively adhered the film-like filters on the light plate/window of the probe because it provides the equivalent function of filtering the illumination and detection light thereby improving Raman scattering analysis.

Applicant respectfully disagrees with these rejections.

As to original claim 3, the applicant claimed that said transparent light receiving plate has a center hole and said transparent excitation small piece is fitted into said center hole. This is taught by neither of the references cited against claim 3. Wach teaches filtering optical fibers by

depositing thin films directly onto the ends of the fibers. And, even if it would have been obvious for a person skilled in the art to have alternatively adhered the film-like filters on the light plate as the examiner says, it would not have been obvious to have a hole in the plate and a small piece fitted into the hole. Thus, claim 9 (which combines original claims 1, 2 and 3) cannot be obtained even if the cited documents are combined. Dependent claims 10 and 11, being dependent upon and further limiting new independent claim 9, should also be allowable over 103 for the aforesaid reason(s), as well as for the additional recitations they contain. Reconsideration and withdrawal of the 103 rejection are, for these reasons, respectfully requested.

The rejection of original claims 4 and 5 under 103 is superseded by and in new independent claim 12. This claim is similar to original claims 4 and 5, but it is more limited in that a distal end face of said bundle of light receiving optical fibers is orthogonal to a center axis of said bundle of light receiving optical fibers. This restriction is a matter which can be easily discerned in the description of the present invention.

In claim 12, only the excitation optical fiber has a slant distal end face. The excitation optical fiber is arranged at an outer side in a radial direction of the bundle of light receiving optical fibers. By this, the excitation light approaches the center of sight field of the light receiving optical fibers for a while after coming out of the slant distal end face of the excitation optical fiber and then the light passes through the center of the sight field so that it can impinge on a place of the vessel inside wall nearer to the center of the sight field.

On the other hand, in Janes et al., the distal end faces of all fibers 111a-114g are slanted and the light projecting fiber 114g is arranged at the center of surrounding light receiving fibers 111a-111f. Even if Janes et al. is combined with Alfano, claim 4 can never be obtained and the effect mentioned above also cannot be obtained. Consequently claim 12 should be allowed. Dependent claims 13, 14 and 15, which further limit claim 12 should, likewise, be allowable.

Reconsideration and withdrawal of the 103 rejections are, for the aforesaid reasons, respectfully requested.

### Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

Respectfully Submitted:

Komachi

By: Steven R. Scott

Steven R. Scott, Registration No.: 32,000

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